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Box Patent Application
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Enclosed herewith for filing is a patent application, as follows:

Inventor(s):   Murphy, Paul J.
Title: Engineering Process For Procuring Components/Peripherals

- _X_ Return Receipt Postcard
- _X_ This Transmittal Letter (in duplicate)
- _3_ page(s) Declaration For Patent Application and Power of Attorney
- _8_ page(s) Specification (not including claims)
- _6_ page(s) Claims
- _1_ page Abstract
- _13_ Sheet(s) of Drawings
- _1_ page(s) Recordation Form Cover Sheet (in duplicate)
- _1_ page(s) Assignment

CLAIMS AS FILED (fees computed under §1.9(f))

For	Number Filed			Number Extra		Rate		$	Basic Fee
									760.00
Total Claims	33	-20	=	13	x	$18	=	$	234.00
Independent Claims	4	-3	=	1	x	$78	=	$	78.00
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Respectfully submitted,

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564507 v1

ENGINEERING PROCESS FOR PROCURING COMPONENTS/PERIPHERALS

Paul J. Murphy

BACKGROUND OF THE INVENTION

5   This invention relates in general to procurement of computer components and more particularly to a database, system and method for procuring computer components.

Description of the Related Art

       Computer systems in general and IBM compatible personal computer systems

10   in particular have attained widespread use for providing computing power to many segments of society. Computer systems, servers and mass storage devices can usually be defined as desk-top, floor-standing, rack-mount, or portable microcomputers that include a system unit having a system processor and associated volatile and non-volatile memory, a display monitor, a keyboard, one or more diskette drives, a fixed

15   disk storage device, optional printer and optional scanners.

       The computer companies such as Dell Computer Corporation typically manufacture and test components for use in a computer system using outside manufacturers and on-site engineers. Engineers develop specifications for components and an iterative process begins. The process typically includes

20   developing a prototype of a component, and transferring the component between those involved in the process, such as the manufacturer and engineers. The process also involves functionality testing and safety testing before finalizing a version of a component for implementation into a computer system.

       Generally, a number of engineers and outside vendor companies assist in the

25   development and procurement of a component. At each stage of the process, those

- 1 -

involved transfer and receive a large amount of data. Outside manufactures typically

have numerous departments, each department having a different functional role with

regard to the development of a component. Similarly, a computer company with on-

site engineers also has a number of departments involved in developing a component.

5   As a result of the many departments involved in component procurement both in and

outside of a computer company, the data produced during development is often

scattered among several locations. The data typically includes oscilloscope wave

forms, electrical and/or mechanical drawings, test results, safety requirements and

more. An engineer in a testing department may keep the data related to testing; an

10   engineer in a prototype development department may have the specifications and

electrical drawings; and a safety coordinator may keep data related to regulatory

requirements. Often the data will be transferred on an as-needed basis between

company engineers and outside manufacturers. For example, a design engineer may

require documentation related to test results before modifying a prototype.

15   When a need for data arises, typical problems encountered include locating the

data, retrieving the data, and storing the data. Data that is shared between engineers

and consultants and manufacturers may be hard to locate. If data is located off-site, a

typical problem relates to the file format of the data. For example, an off-site

manufacturer may use an incompatible software program for storing data, requiring

20   either a purchase of software or locating a seldom-used program within the company.

If software formatting of data is difficult, facsimile transmissions often prove

inadequate depending on the level of detail of the data. After an engineer reviews

data received from an off-site manufacturer, an engineer typically stores the data.

However, a typical problem relates to where the data should be stored and in what

25   format. If the data is stored in the format provided by an off-site manufacturer, it may

be irretrievable. If the data is stored as a hard copy, the data may unnecessarily use

valuable storage space.

What is needed is a system and method of procuring components that enables

manufacturers and engineers to efficiently locate and utilize relevant data.

SUMMARY OF THE INVENTION

Accordingly, a system and method of component procurement efficiently provides a centralized location for storing and retrieving component data. The engineering method is for procuring a manufactured component through a plurality of development stages. According to one embodiment, the method includes providing a database for storing information related to procuring the manufactured component, sharing the database among a plurality of relevant parties such as a manufacturer and a supplier and inputting data into the database by at least one of the relevant parties during a development stage of the manufactured component. The method also may include modifying the database at each development stage.

The database holds data related to procurement of components for a computer system and is accessible to a manufacturer and at least one outside vendor. The database includes a pointer for locating data related to at least one of the development stages. The data in the database includes procurement-related data such as production information, testing information, regulatory information, and cost information. More specifically, the database is stored on a memory and includes a plurality of partitions, each partition relating to manufacturing the component. The database also includes a plurality of fields within each partition, the plurality of fields for logging information related to a plurality of manufacturing development stages. The database also includes a plurality of storage locations for storing data related to the plurality of partitions.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be better understood, and its numerous objects, features, and advantages made apparent to those skilled in the art by referencing the accompanying drawings.

FIGURE 1 is a block diagram illustrating a procurement process.

FIGURE 2 is a block diagram representing an embodiment of a database in accordance with the present invention.

FIGURE 3 is a flow diagram representing a procurement process using a database in accordance with an embodiment of the present invention.

FIGURE 4A & 4B are screen prints from a database according to an embodiment of the present invention showing a list of checklists.

5   FIGURE 5A & 5B are screen prints from a database showing an electrical evaluation form according to an embodiment of the present invention.

FIGURE 6A & 6B are screen prints from a database showing an electrical evaluation form including bench testing according to an embodiment of the present invention.

10   FIGURE 7A & 7B are screen prints from a database showing a mechanical evaluation form according to an embodiment of the present invention.

FIGURE 8A & 8B are screen prints from a database showing a design review form according to an embodiment of the present invention.

FIGURE 9A & 9B are screen prints from a database showing a manufacturability form including an evaluation build form, a pilot build form and a production build form according to an embodiment of the present invention.

FIGURE 10A & 10B are screen prints from a database showing a regulatory form according to an embodiment of the present invention.

FIGURE 11A & 11B are screen prints from a database showing a reliability form according to an embodiment of the present invention.

FIGURE 12A & 12B are screen prints from a database showing a system test form and a packaging form according to an embodiment of the present invention.

FIGURE 13A & 13B are screen prints from a database showing a documentation form according to an embodiment of the present invention.

The use of the same reference symbols in different drawings indicates similar or identical items.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Referring to FIG. 1, the manufacturing of a computer system involves a number of engineers and outside vendor companies 12, 14, 16, 18 and 19 to assist in the development and procurement of components used in the computer system. At each stage of the process for each component, the vendors and the manufacturer 10 transfer and receive a large amount of data. For example, a vendor supplying electrical parts 12 will have electrical drawings and schematics; a vendor supplying mechanical parts 14 will have mechanical drawings, some of which may or may not be in digital format.

According to an embodiment of the present invention, the procurement process illustrated in FIG. 1 is greatly enhanced by the use of a shared database. Referring to FIG. 2, each of the vendors and the manufacturer 10 share a common database for each peripheral, computer component, or project. According to another embodiment, a shared database includes databases for different components of a computer system. Instead of transferring paper copies, floppy discs, data books and other easily lost items of data, database 20 includes all necessary information. For example, the database 20 may store oscilloscope wave forms, electrical and mechanical drawings, automatic test equipment data, word processor files, spreadsheet files and images.

The database efficiently can be stored on a memory. For example, the database is adaptable for storage on a compact disc that is transferred between manufacturer 10 and the different suppliers 12, 14, 16, 18, 19. Alternatively, the database can be accessed via a secured network such as a secured website.

Referring to FIG. 3, a method for procuring a manufactured component through a plurality of development stages is shown. The Figure shows step 30, which relates to providing a database for storing information related to procuring the

manufactured component. Step 32 relates to sharing the database among a plurality of relevant parties. The sharing includes placing the database in an accessible internet/intranet network and placing the database on a compact disc that is physically transported among relevant parties. Step 34 relates to inputting data into the database

5 by at least one of the relevant parties during a development stage of the manufactured component. One of ordinary skill in the art will appreciate that the inputting of data into the database may be done by suppliers, engineers for the manufacturer or other relevant parties. Step 36 relates to modifying the database at each development stage if necessary. It will be appreciated that modifying the database may not be necessary

10 at all development stages. For example, if a prototype meets specifications, further development changes may or may not be necessary.

According to one embodiment, the database includes a plurality of partitions, each partition relating to a manufacturing stage for the component, with a plurality of fields within each partition, the plurality of fields for logging information related to

15 the different manufacturing development stages. More specifically, as shown in FIGS. 4-13 different pages from a database show a plurality of fields including a plurality of forms for inputting data from outside suppliers and manufacturer of test results and documentation. For example, Fig. 5 relates to results from automatic test equipment the data from test results is accessible through the database. Fig. 6 relates

20 to bench test reports that are accessible through the database. The bench test reports can be both input to the database or edited. Fig. 7 relates to a mechanical form for inputting and editing mechanical part data. Fig. 8 relates to a final design review form for inputting edits's data relations to electrical, mechanical packaging and tooling data. Fig. 9 relates to a manufacturability form for inputting & editing data relating to

25 supplier review, manufacturer review and tooling plans and changes to tooling plans. Fig. 10 relates to a safety form including governmental safety reports and certificates. Fig. 11 relates to a reliability test results form including data for test results and reports. The data can be input by either suppliers or the manufacturer. Fig. 12 relates to a system test form for inputting and editing system test results. For example,

30 system test results may include acoustic testing, thermal testing, functionality testing

and shock/vibration testing. Fig. 13 relates to a documentation form. For example, either a supplier or the manufacturer can input or edit schematics, specifications and other types of developmental documentation in the documentation form.

Referring to FIG. 4B, according to an embodiment, the database includes a
5 checklist 410 identifying different manufacturing areas that require documentation I to IX. The fields 410 allow either the manufacturer or a supplier to input data relating to each stage. The plurality of fields 420 in the checklist relate to the different manufacturing stages: the prototype stage; development stage; secondary stage; and production release stage. Alternaternatively, the database includes a sustaining stage
10 (not shown) for including documentation after the component has gone to production. The particular form identified in FIG. 4B relates to a power supply qualification checklist and provides fields for identifying an outside supplier and model 430, a Dell Computer Corporation part number, 440 a field for providing the Dell engineer 450 and a field for providing the supplier engineer 460.

15 FIGS. 4-13 demonstrate a database that provides a plurality storage locations for storing data related to the plurality of pages. Each page is a partition of the database that can be completed by different relevant parties. Accordingly, the database is accessible to a manufacturer and at least one outside supplier or internal supplier. In one embodiment, the database is accessible via an internet/intranet
20 connection to a network. In this embodiment, a manufacturer controlling the database may provide different security levels for access to the database. For example, a particular password may be relevant to each partition. Other security measures include providing the database to parties on a read only basis while others may have read and write capabilities.

25 According to another embodiment, the database is accessible via the memory being transportable. For example, the database may be located on a compact disc in either read only or read and write format. The compact disc is capable of being transported to a supplier that inputs data. Once the data is complete, the supplier

returns the compact disc to the manufacturer for review and further testing in an iterative manner.

According to an embodiment of the database, pointers within the database locate where further data related to component procurement is located. The data may

5   include tests, schematics, mechanical and electrical drawing, tables and other information. In order for a plurality of parties to view the data, the database optionally provides pointers to the location of a plurality of viewers. Such viewers include those that are widely available free of charge. The viewers enable the manufacturer and suppliers to view identical data. As viewers, the data is available on

10   a read-only basis.

Those of skill in the art will recognize that, based upon the teachings herein, several modifications may be made to the embodiments shown in Figures 1-13. For example, the Figures relate to a database that one of ordinary skill in the art can modify using the disclosure herein described to other situations in which a number of

15   relevant parties are required to share documentation.

While particular embodiments of the present invention have been shown and described, it will be recognized to those skilled in the art that, based upon the teachings herein, further changes and modifications may be made without departing from this invention and its broader aspects, and thus, the appended claims are to

20   encompass within their scope all such changes and modifications as are within the true spirit and scope of this invention.

WHAT IS CLAIMED IS:

1   1.   A method for procuring a manufactured component through a plurality
2   of development stages, the method comprising:
3   providing a database for storing information related to procuring the
4   manufactured component;
5   sharing the database among a plurality of relevant parties;
6   inputting data into the database by at least one of the relevant parties during a
7   development stage of the manufactured component; and
8   modifying the database at each development stage if necessary.

1   2.   The method of claim 1 wherein the database holds data related to
2   procurement of a plurality of components for a computer system.

1   3.   The method of claim 1 further comprising:
2   providing a pointer in the database, the pointer locating data related to at least
3   one of the development stages.

1   4.   The method of claim 1 wherein the relevant parties include a
2   manufacturer and at least one supplier.

1   5.   The method of claim 1 wherein the data includes:
2   production information;
3   testing information;
4   regulatory information; and
5   cost information.

1   6.   The method of claim 1 wherein the database is stored on a memory and
2   includes:
3   a plurality of partitions, each partition relating to manufacturing the
4   component;

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5   a plurality of fields within each partition, the plurality of fields for logging

6   information related to a plurality of manufacturing development stages;

7   and

8   a plurality of storage locations for storing data related to the plurality of

9   partitions;

10   wherein the database is accessible to a manufacturer and at least one outside vendor.

1   7.   The method of claim 1 wherein the database is accessible via one of an

2 internet connection to a network, an intranet connection to a network and both an

3 internet and intranet connection to a network.

1   8.   The method of claim 1 wherein the database is accessible via a

2 transportable memory.

1   9.   A database stored on a memory for use in manufacturing a component,

2 the database comprising:

3   a plurality of partitions, each partition relating to manufacturing the

4   component;

5   a plurality of fields within each partition, the plurality of fields for logging

6   information related to a plurality of manufacturing development stages;

7   and

8   a plurality of storage locations for storing data related to the plurality of

9   partitions;

10   wherein the database is accessible to a manufacturer and at least one outside vendor.

1   10.   The database of claim 9 wherein the database is accessible via one of

2 an internet connection to a network, an intranet connection to a network, and both an

3 internet and intranet connection to a network.

1   11.   The database of claim 9 wherein the database is accessible via the

2 memory being transportable.

1   12.   The database of claim 9 wherein the database is capable of activating a

2   plurality of programs for viewing and editing the data, the plurality of programs

3   enabling the manufacturer and the at least one outside vendor to view and edit

4   identical data.

1   13.   The database of claim 12 wherein the plurality of programs are read-

2   only viewers.

1   14.   The database of claim 9 wherein the plurality of fields includes a

2   plurality of comment fields.

1   15.   The database of claim 9 wherein the plurality of partitions includes a

2   plurality of forms for inputting and viewing data.

1   16.   The database of claim 15 wherein the plurality of forms include at least

2   one of an evaluation form, a regulatory form, a reliability form, a design review form,

3   a manufacturability form, a documentation form, a system test form, a mechanical

4   form, a bench test form and a report form.

1   17.   A method of procuring a computer component comprising:

2   providing a database stored on a memory, the database including:

3   a plurality of partitions, each partition relating to manufacturing the

4   component;

5   a plurality of fields within each partition, the plurality of fields for

6   logging information related to a plurality of manufacturing

7   development stages; and

8   a plurality of storage locations for storing data related to the plurality

9   of partitions, and

10   providing access to the database by a manufacturer and at least one outside

11   vendor.

1   18.   The method of claim 17 wherein the database is accessible via one of

2 an internet connection to a network, an intranet connection to a network, and both an

3 internet and intranet connection to a network.

1   19.   The method of claim 17 wherein the database is contained in a

2 transportable memory.

1   20.   The method of claim 17 further comprising:

2   enabling the manufacturer and the at least one outside vendor to view identical

3   data via a plurality of programs for viewing and editing the data.

1   21.   The method of claim 20 wherein the plurality of programs are read-

2 only viewers.

1   22.   The method of claim 17 wherein the plurality of fields includes a

2 plurality of comment fields.

1   23.   The method of claim 17 wherein the plurality of partitions includes a

2 plurality of forms for inputting and viewing data.

1   24.   The method of claim 23 wherein the plurality of forms include at least

2 one of an evaluation form, a regulatory form, a reliability form, a design review form,

3 a manufacturability form, a documentation form, a system test form, a mechanical

4 form, a bench test form and a report form.

1   25.   The method of claim 17 wherein the plurality of partitions includes:

2   a second subset of the plurality of fields for inputting data related to test

3   results.

1   26.   A computer system comprising:

2   a processor;

3   system memory coupled to the processor;

4   a memory coupled to the processor, the memory including a database for use

5   in manufacturing a component, the database including:

6   a plurality of partitions, each partition relating to manufacturing the

7   component;

8   a plurality of fields within each partition, the plurality of fields for

9   logging information related to a plurality of manufacturing

10   development stages; and

11   a plurality of storage locations for storing data related to the plurality

12   of partitions;

13   wherein the database is accessible to a manufacturer and at least one outside

14   vendor.

1   27.   The computer system of claim 26 wherein the database is accessible

2 via a computer network.

1   28   The computer system of claim 26 wherein the database is accessible

2 via the memory being transportable.

1   29.   The computer system of claim 26 wherein the database includes a

2 plurality of programs for editing and viewing the data, the plurality of programs

3 enabling the manufacturer and the at least one outside vendor to view identical data.

1   30.   The computer system of claim 26 wherein the plurality of viewers are

2 read-only viewers.

1   31.   The computer system of claim 26 wherein the plurality of fields

2 includes a plurality of comment fields.

1   32.   The computer system of claim 26 wherein the plurality of partitions

2 includes a plurality of forms for inputting and viewing data.

1   33.   The computer system of claim 32 wherein the plurality of forms

2   include at least one of an evaluation form, a regulatory form, a reliability form, a

3   design review form, a manufacturability form, a documentation form, a system test

4   form, a mechanical form, a bench test form and a report form.

This Draft Patent Application Contains Information Confidential to **Error! Reference source not found.** and Includes Privileged, Attorney-Client Communications

Attorney Docket No.: M-7803 US

ENGINEERING PROCESS FOR PROCURING COMPONENTS/PERIPHERALS

Paul J. Murphy

ABSTRACT OF THE DISCLOSURE

5   A system and method of component procurement efficiently provides a centralized location for storing and retrieving component data. The engineering method is for procuring a manufactured component through a plurality of development stages. According to one embodiment, the method includes providing a database for storing information related to procuring the manufactured component,

10   sharing the database among a plurality of relevant parties such as a manufacturer and a supplier and inputting data into the database by at least one of the relevant parties during a development stage of the manufactured component. The method also includes modifying the database at each development stage if necessary. The database holds data related to procurement of components for a computer system and is

15   accessible to a manufacturer and at least one outside vendor. The database includes a pointer for locating data related to at least one of the development stages. The data in the database includes procurement-related data such as production information, testing information, regulatory information, and cost information. The database is stored on a memory and includes a plurality of partitions, each partition relating to manufacturing

20   the component. The database also includes a plurality of fields within each partition, the plurality of fields for logging information related to a plurality of manufacturing development stages. The database also includes a plurality of storage locations for storing data related to the plurality of partitions.
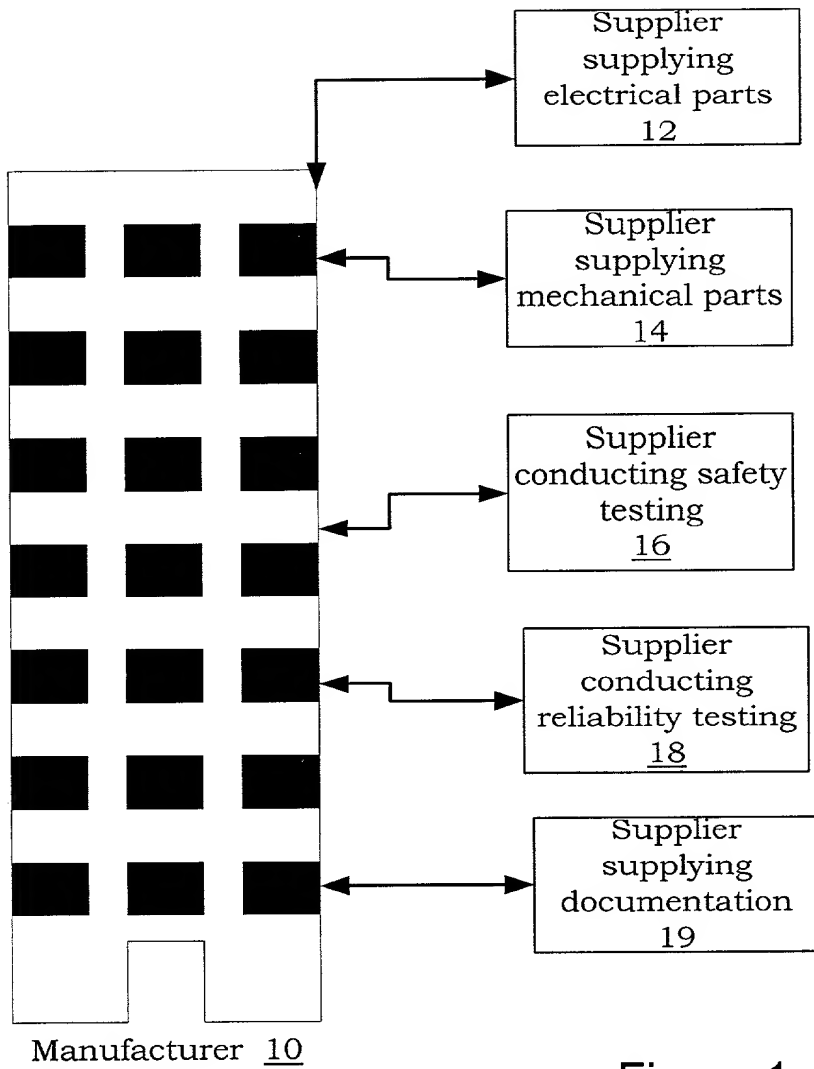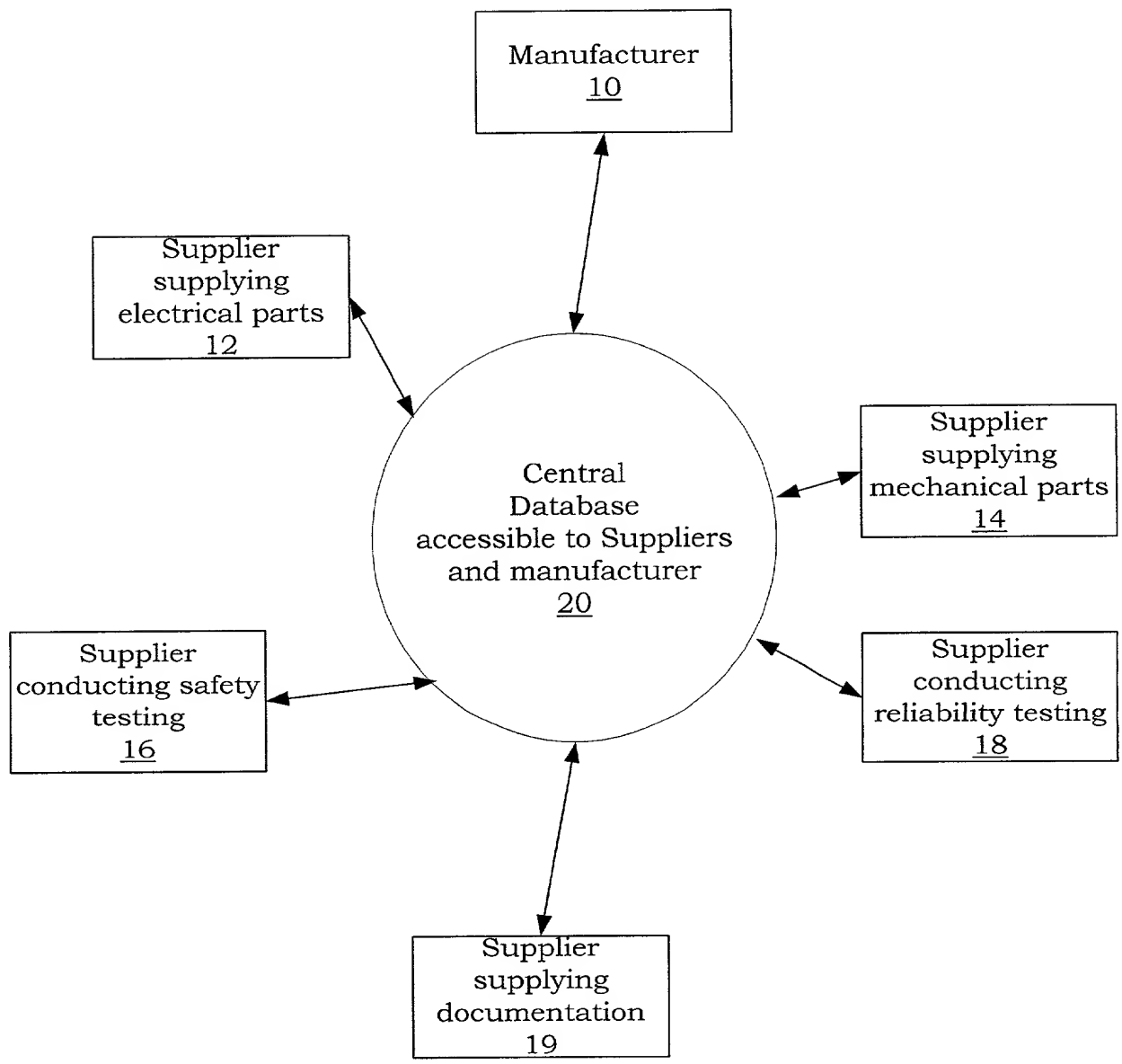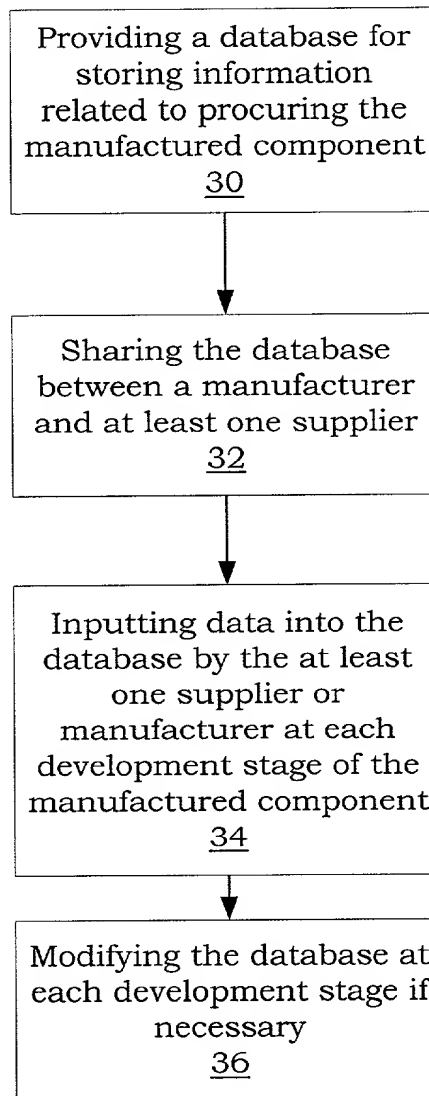
Supplier supplying electrical parts
12

Supplier supplying mechanical parts
14

Supplier conducting safety testing
16

Supplier conducting reliability testing
18

Supplier supplying documentation
19

Manufacturer 10

Figure 1

Manufacturer
10

Supplier
supplying
electrical parts
12

Central
Database
accessible to Suppliers
and manufacturer
20

Supplier
supplying
mechanical parts
14

Supplier
conducting safety
testing
16

Supplier
conducting
reliability testing
18

Supplier
supplying
documentation
19

Figure 2

```
┌─────────────────────────────┐
│   Providing a database for  │
│     storing information     │
│   related to procuring the  │
│   manufactured component    │
│             30              │
└─────────────────────────────┘
                │
                ▼
┌─────────────────────────────┐
│    Sharing the database     │
│   between a manufacturer    │
│  and at least one supplier  │
│             32              │
└─────────────────────────────┘
                │
                ▼
┌─────────────────────────────┐
│    Inputting data into the  │
│   database by the at least  │
│        one supplier or      │
│     manufacturer at each    │
│   development stage of the  │
│    manufactured component   │
│             34              │
└─────────────────────────────┘
                │
                ▼
┌─────────────────────────────┐
│  Modifying the database at  │
│ each development stage if   │
│          necessary          │
│             36              │
└─────────────────────────────┘
```

Figure 3

Figure 4A

FIgure 4B
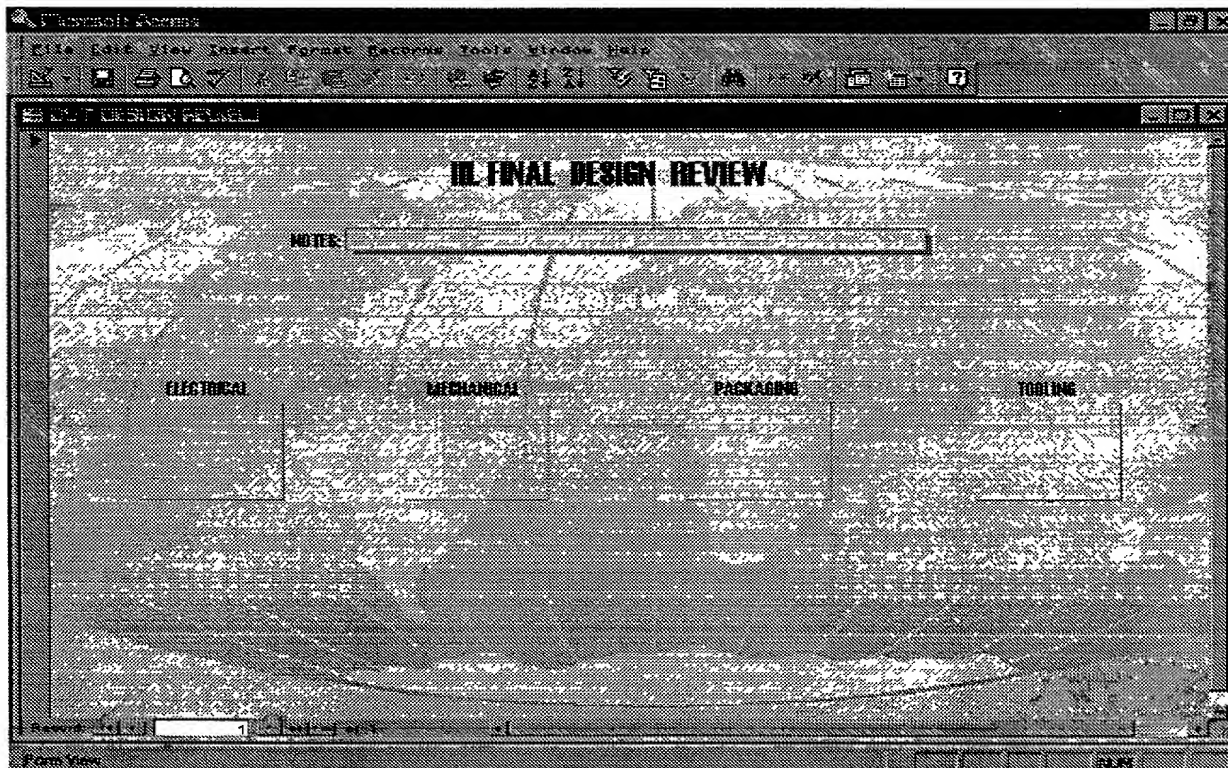
Figure 5A

Figure 5B
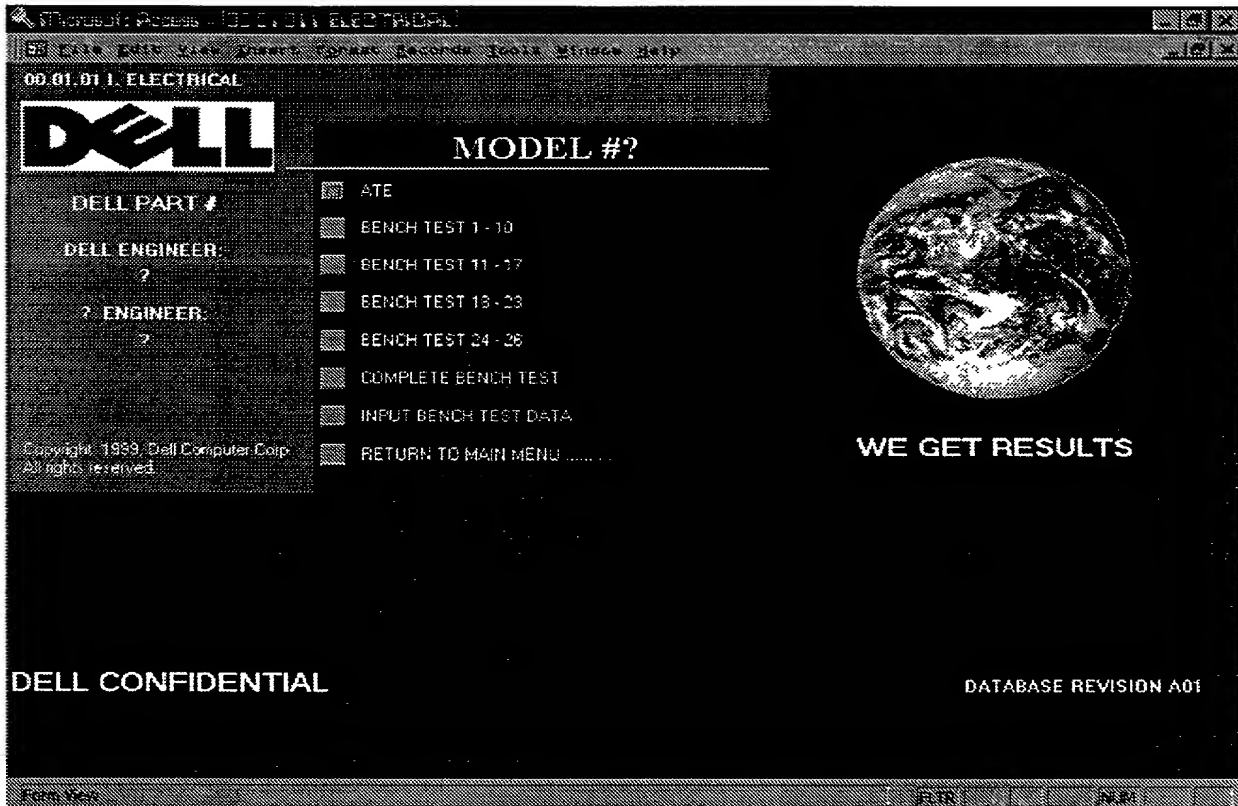
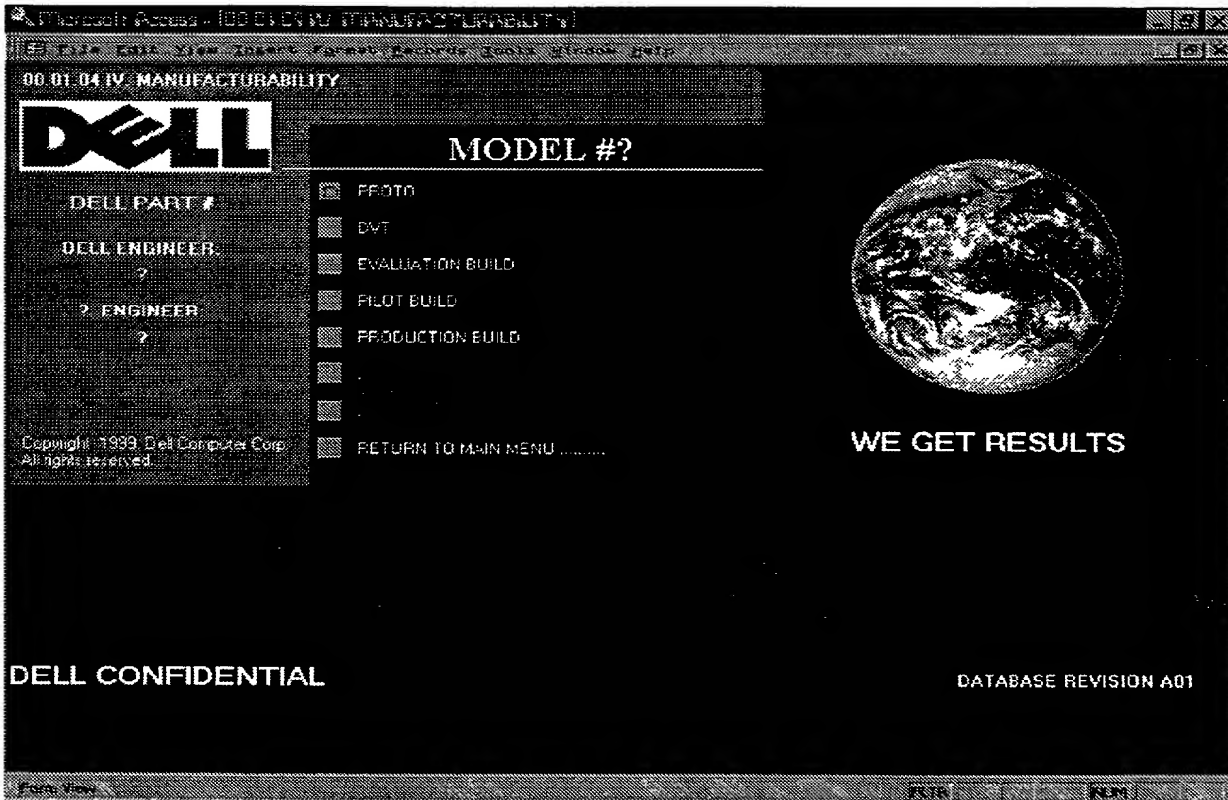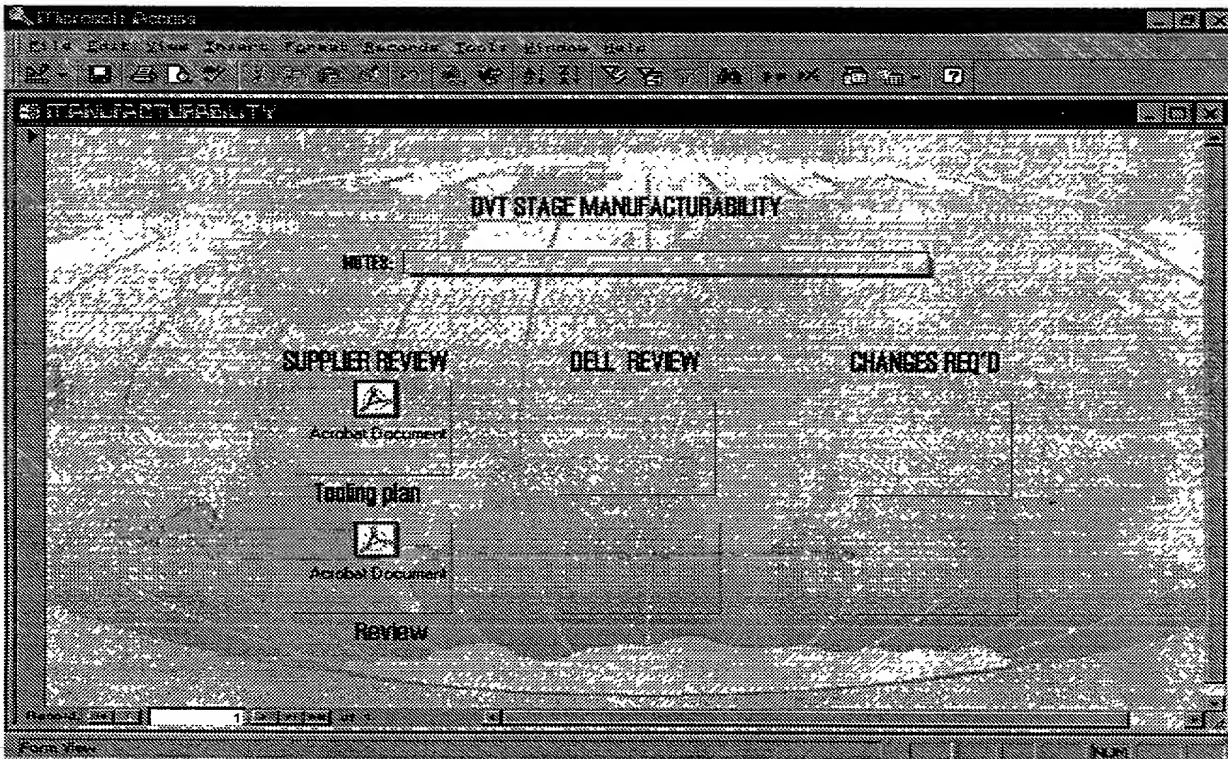Figure 6A
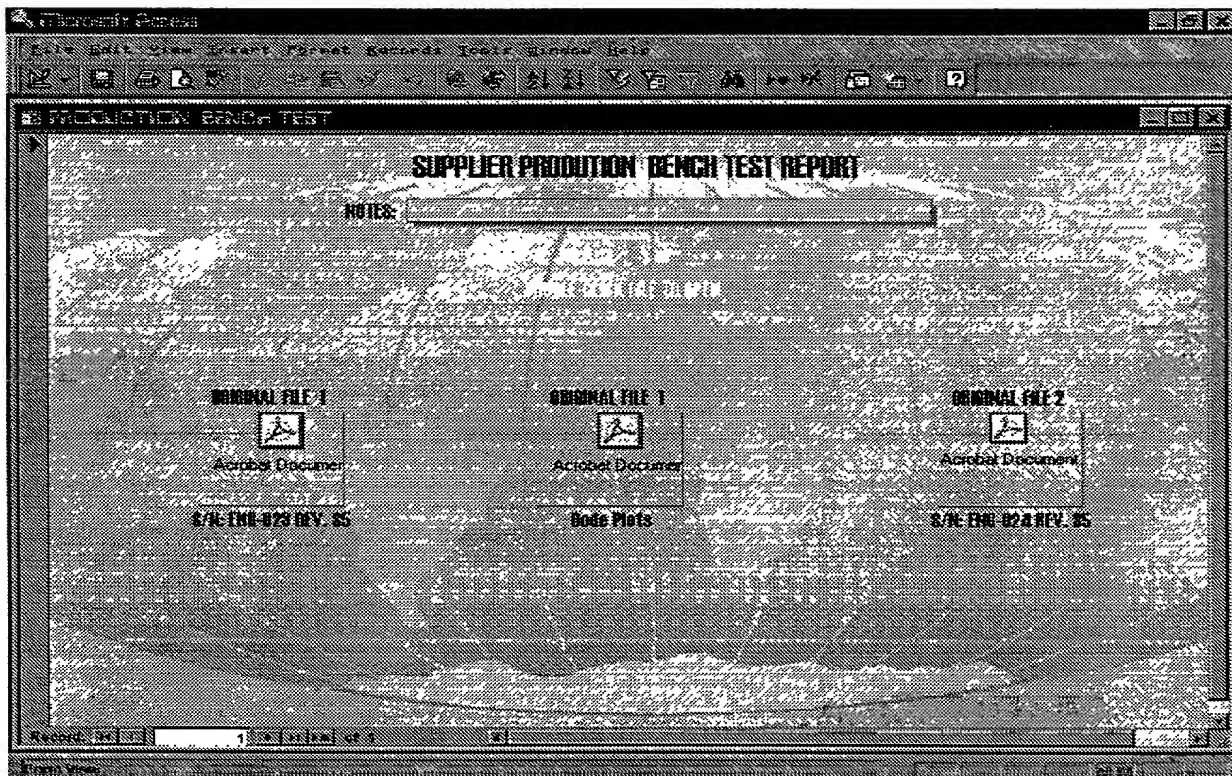
Figure 6B
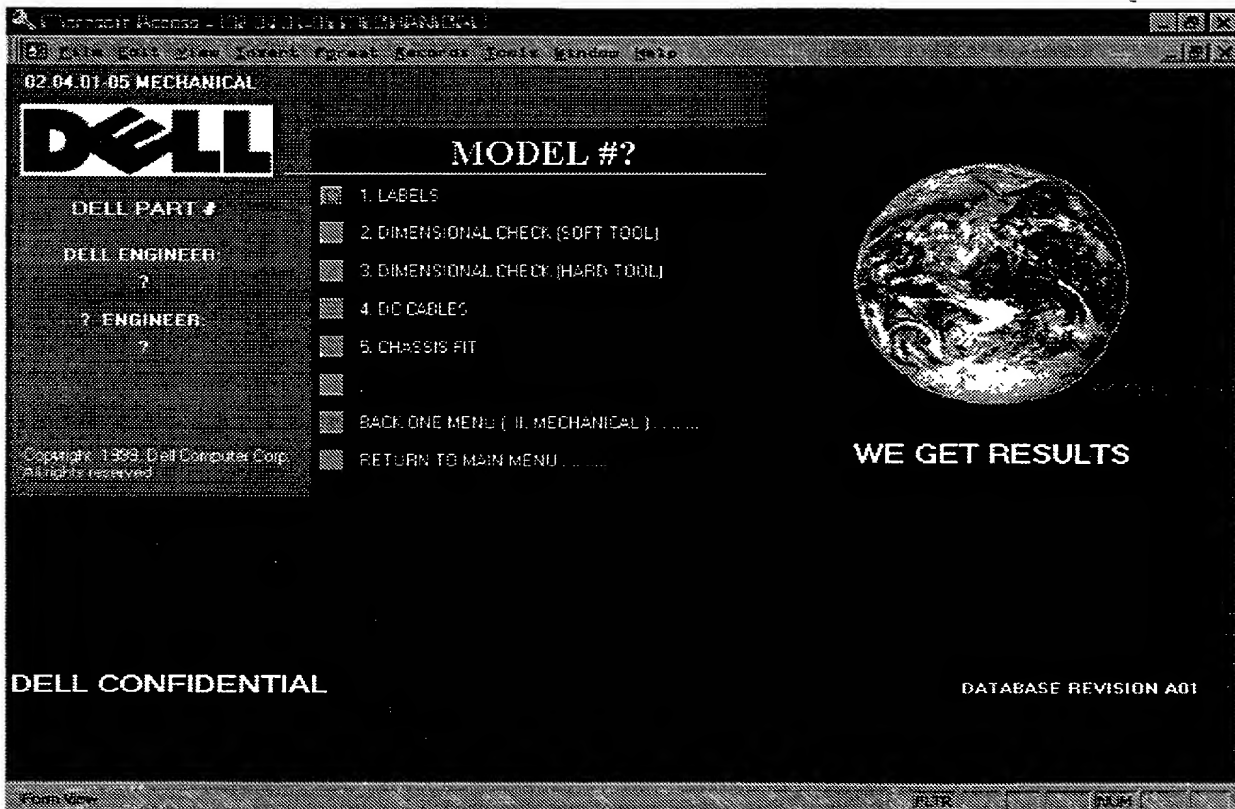
Figure 7A
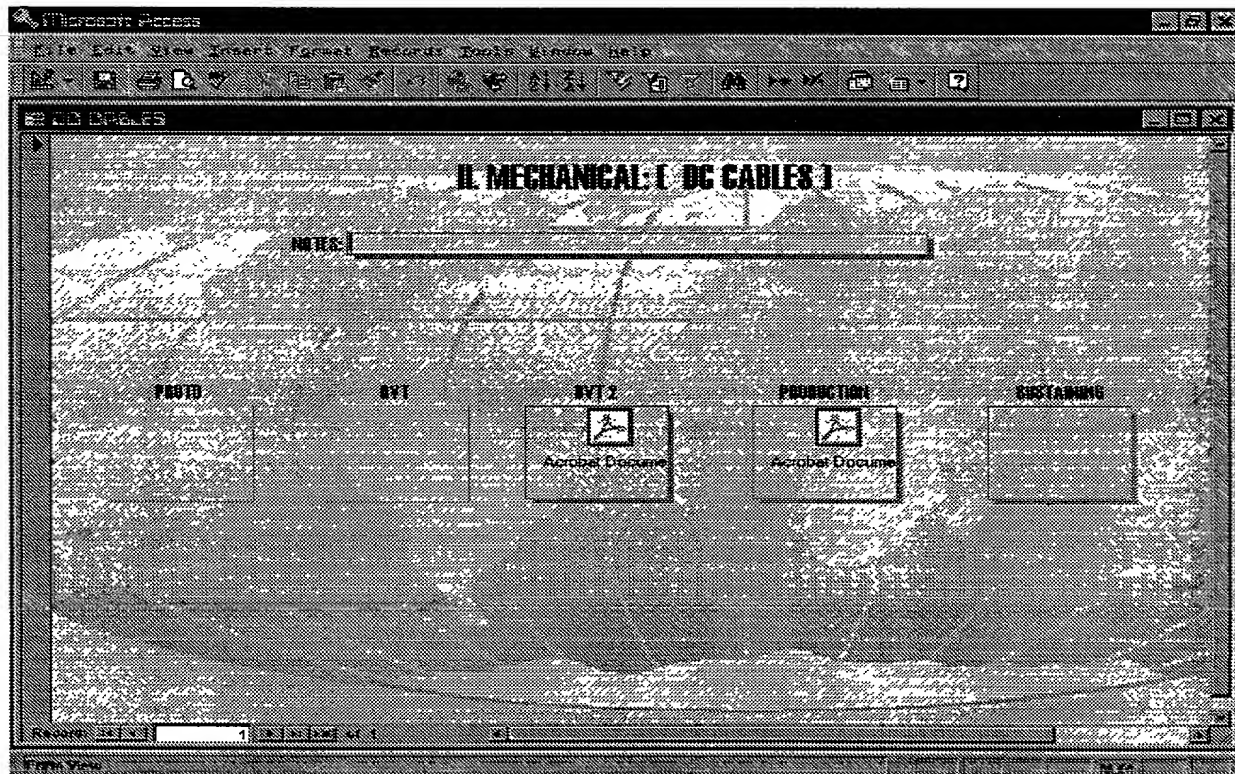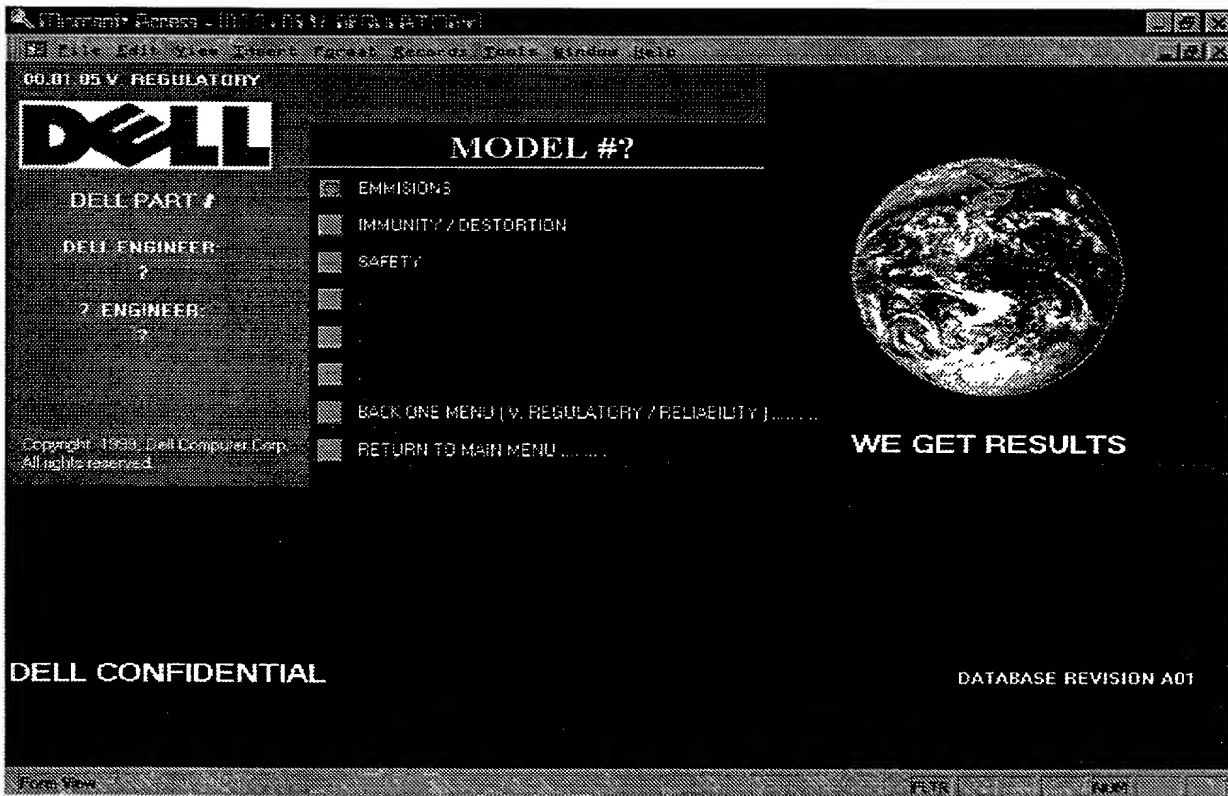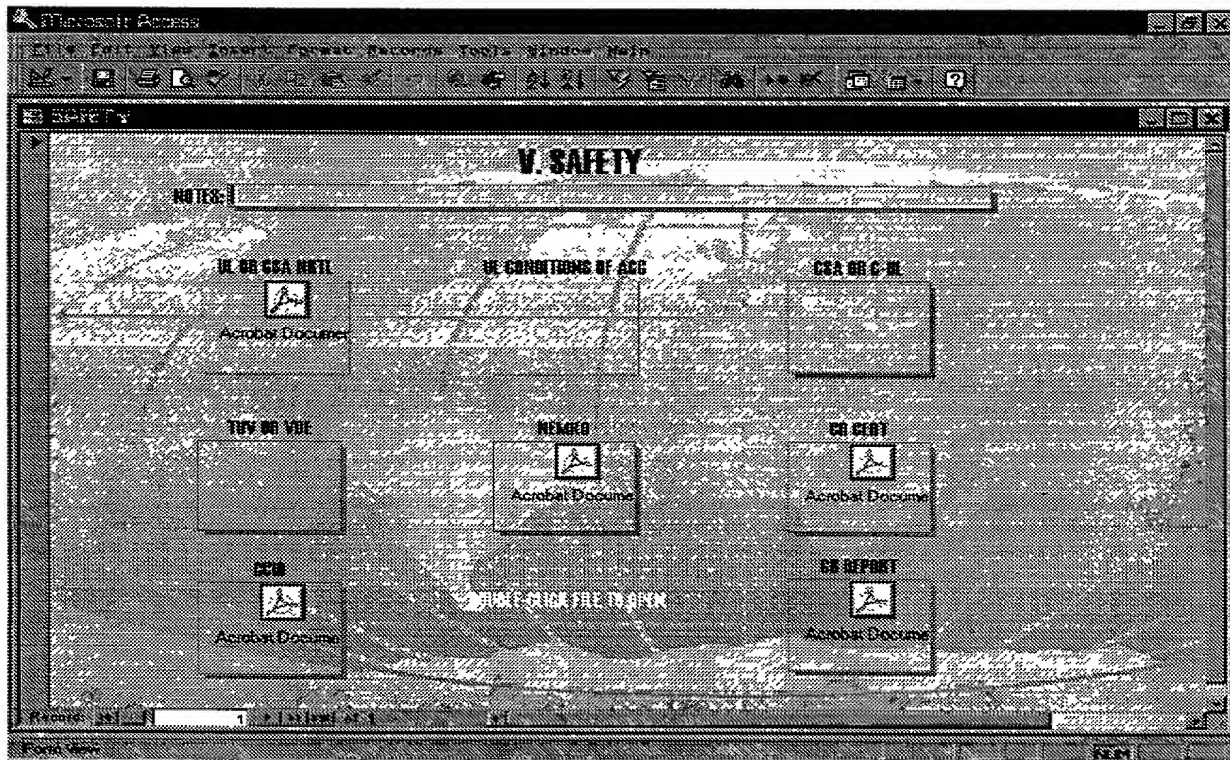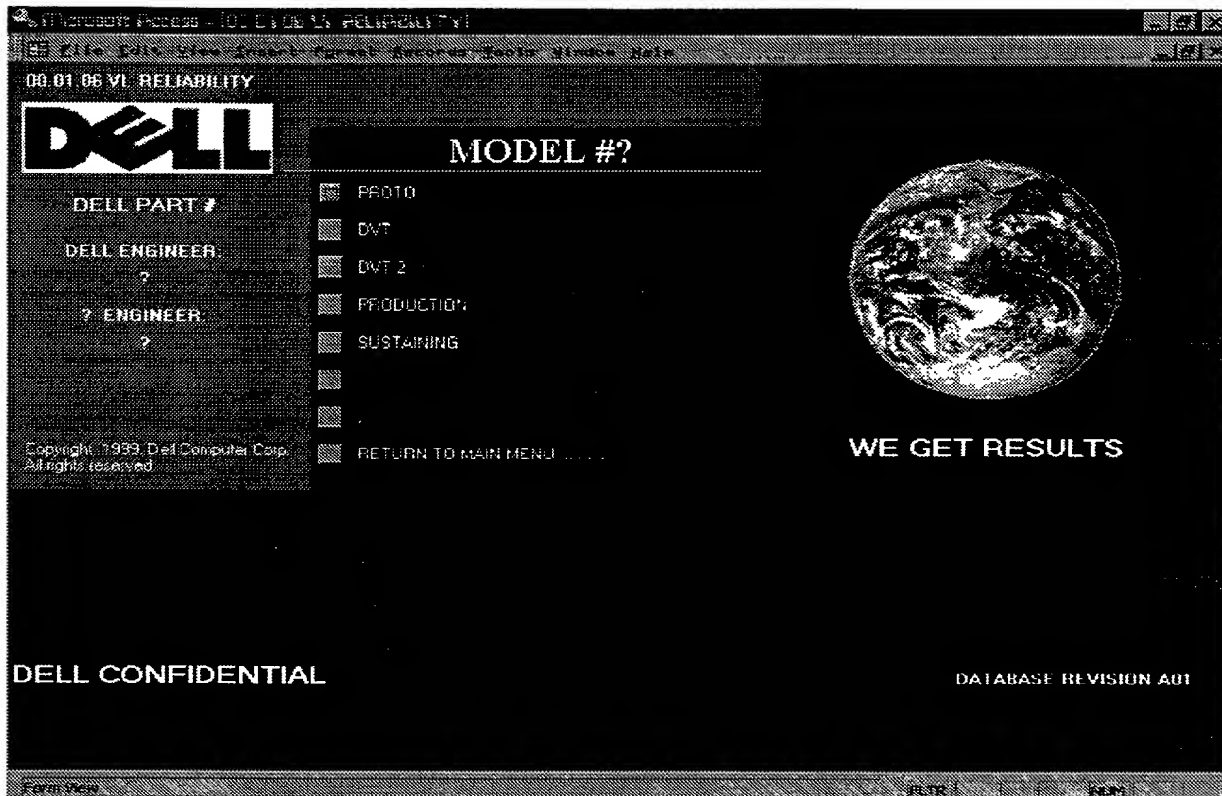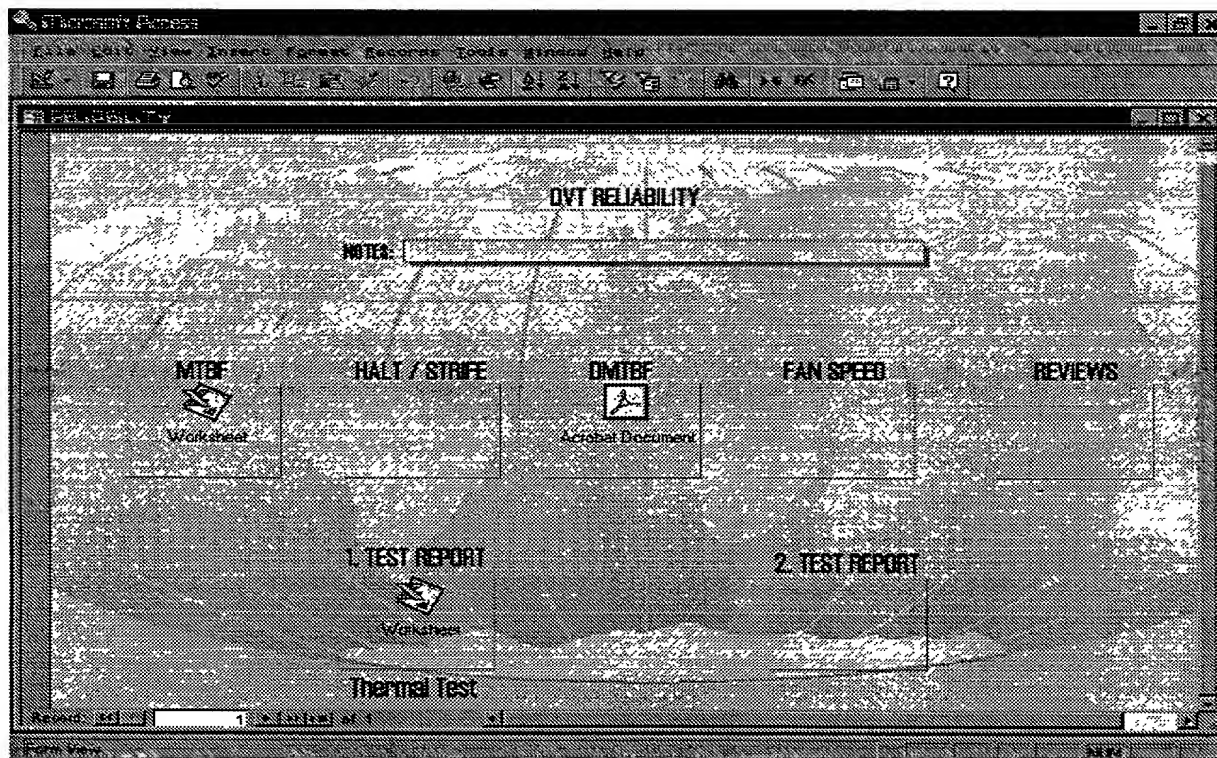

Figure 7B
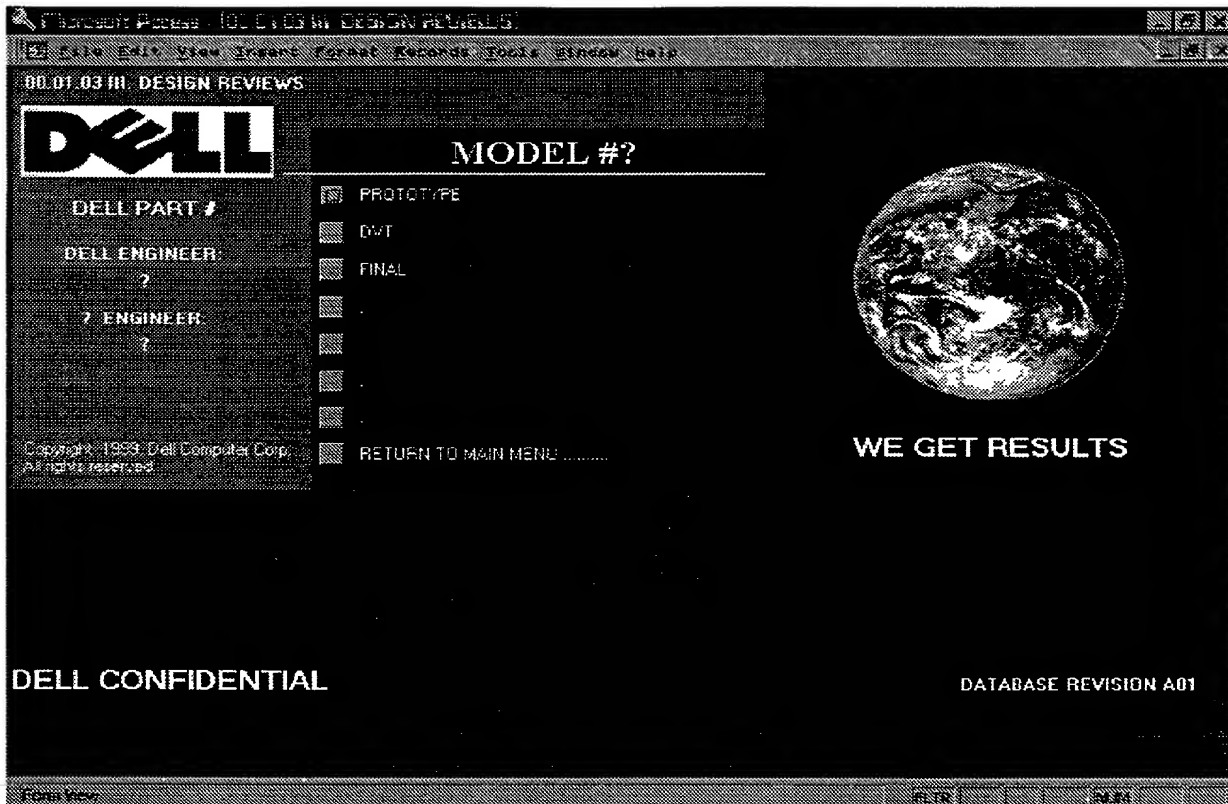
Figure 8A

Figure 8B

Figure 9A

Figure 9B

Figure 10A

Figure 10B

Figure 11A

Figure 11B

Figure 12A

Figure 12B

MODEL #?

☐ 1. BID

☐ 2. CIRCUIT DESCRIPTION

☐ 3. SUPPLIER SPECIFICATION

☐ 4. DELL SPECIFICATION

☐ 5. SCHEMATIC

☐ 6. PARTS LIST AND AVL

☐ BACK ONE MENU (IX DOCUMENTATION) . . . . .

☐ RETURN TO MAIN MENU . . . . .

DELL PART #

DELL ENGINEER:
?

? ENGINEER:
?

Copyright, 1999, Dell Computer Corp.
All rights reserved.

WE GET RESULTS

DELL CONFIDENTIAL

DATABASE REVISION A01

Figure 13A

IX. DOCUMENTATION [SCHEMATIC]

NOTES:

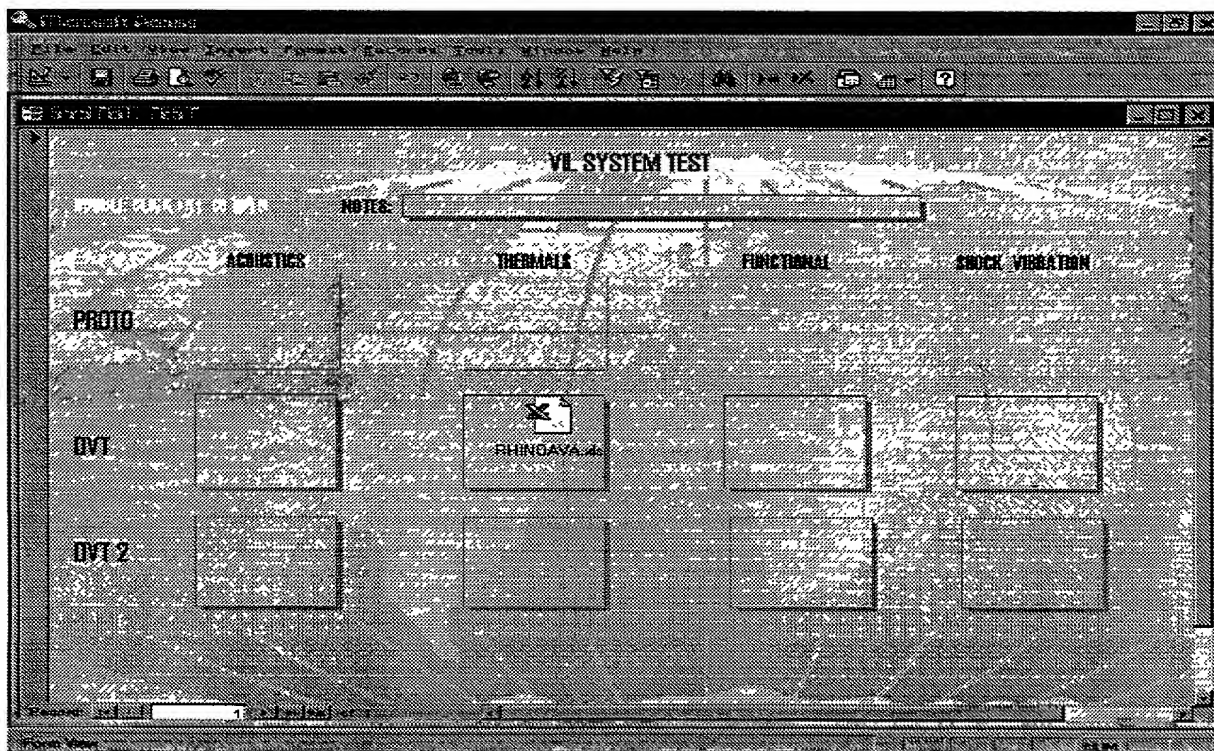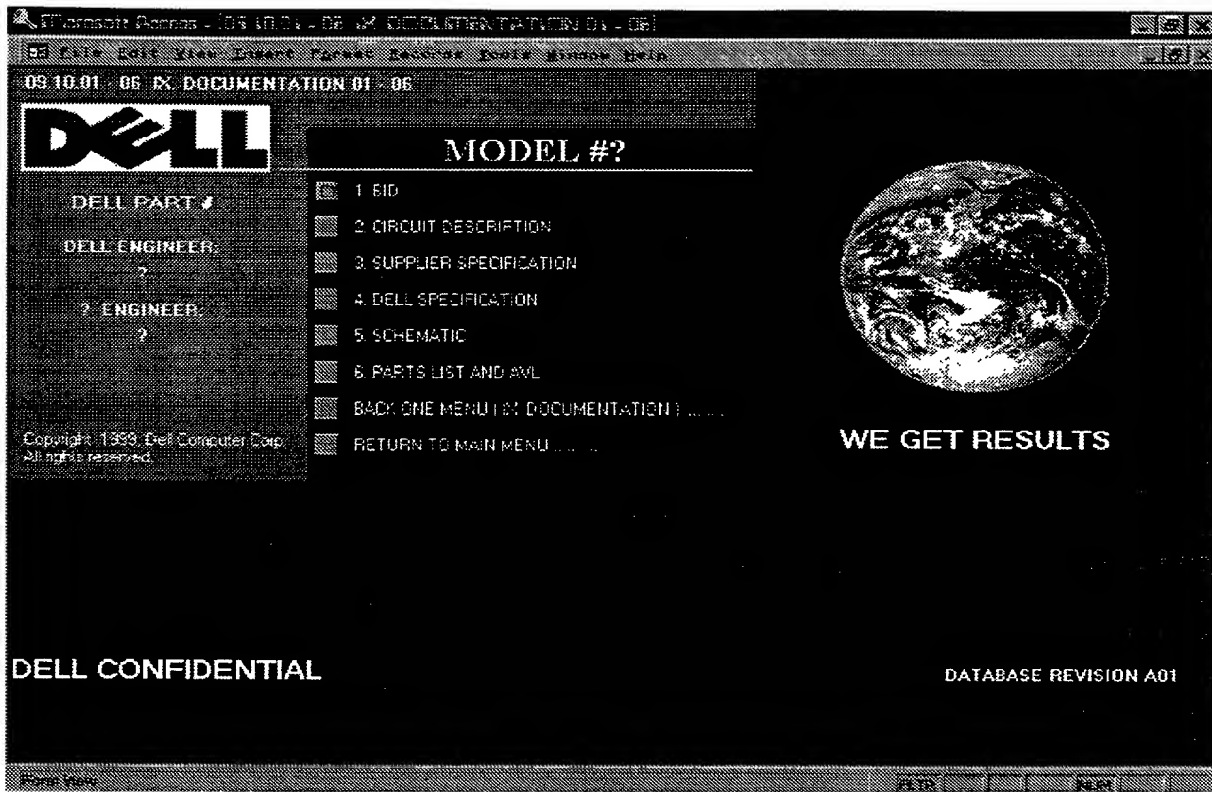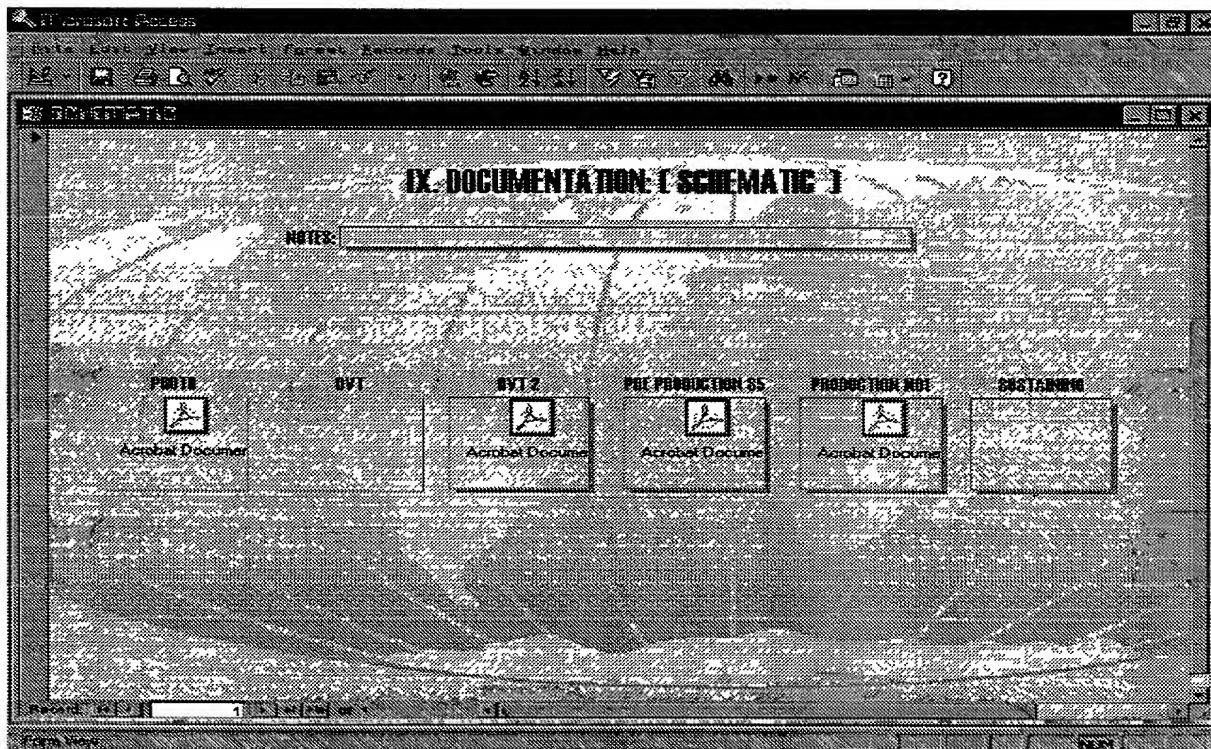| PROTO	DVT	DVT 2	PRE PRODUCTION SS	PRODUCTION N01	SUSTAINING
Acrobat Document		Acrobat Document	Acrobat Document	Acrobat Document	

Figure 13B

DECLARATION FOR PATENT APPLICATION
AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below adjacent to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of subject matter (process, machine, manufacture, or composition of matter, or an improvement thereof) which is claimed and for which a patent is sought by way of the application entitled

Engineering Process For Procuring Components/Peripherals

which (check) ☒ is attached hereto.

☐ and is amended by the Preliminary Amendment attached hereto.

☐ was filed on _____ as Application Serial No. _____

☐ and was amended on ___ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
Number	Country	Day/Month/Year Filed	Yes	No
N/A			☐	☐

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

Provisional Application Number	Filing Date
N/A	

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information, which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56, which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status (patented, pending, abandoned)
N/A		

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith:

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Full name of sole (or first joint) inventor: Paul J. Murphy

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